

of white and blue stones, and are rendered more conspicuous by the black band across the breast, which is quite wanting in the young bird.

The nest is merely a saucer-shaped depression in the sand. The natives know the bird well, and told me that their children find the eggs; and the Ladakhi boy is a terror among birds' eggs, which he loves to suck whenever he gets the chance. The natives also say that the bird lays one or two eggs, and the colour is grey-blue with dark markings. This sounds likely, as it is a good protective colour, and would make it very hard to detect the egg among the shingle. I got this information from the head man at Suru; and when I asked him as to what colour the egg was, after some thought he picked up a blue pebble and said, "Like this, sahib, with black markings" (*kala nishan*).

I made a rough drawing of the young bird, which I afterwards sent, preserved in spirit, to Professor Newton at Cambridge.

The call of the old bird more nearly resembles that of the Whimbrel than any other I can mention.

#### XLII.—*Notes on the Godwits (Limosa).*

By E. A. S. ELLIOT.

AMONGST the Waders, a class of birds I have had unusual opportunities of watching for many years along the shores of Kingsbridge Estuary, South Devon, the Bar-tailed Godwits have always been a great attraction. The striking change of plumage from winter to summer, their erratic appearance at the times of migration, and the desire to raise this group above the level of that hen-pecked one of Phalaropes, to which they have been likened in their habits of courtship and nidification, have induced me to follow the Godwit in his coming in and going out ever since I could tell one bird from another.

In the fall-migration the Bar-tailed Godwit arrives in our estuary the latter end of August in small flocks of six or

seven, sometimes in greater numbers, with increasing augmentation till about the beginning of November, when it is not unusual to find a flock of a hundred or more. As the cold weather approaches these birds leave us, but either a few remain behind, or others take their place in severe weather from the north-east coasts of England, where the species is abundant all through the winter; for I have obtained specimens during all the winter months, but in small numbers, and never at this season (mid-winter) could the species be said to exist in flocks.

As spring advances and April is ushered in, small straggling flocks of winter-plumaged birds, with rarely a red-coloured bird amongst them, may be found on their favourite feeding-grounds (the Godwits in our estuary have a partiality for one particular mudbank). The climatic conditions, however, must be favourable for their appearance: it must be stormy, with N.W. winds; for these birds seem to be a contingent from the flocks observed passing up the west coast of Ireland at this time, so that for many years in succession it happens we do not see a Godwit at all at this season, the elements not being propitious, and because we are out of the regular line of their spring migration. They seem to follow the east and west lines of our coast unless driven east or west by the prevailing wind.

When the month of May approaches, every legitimate prayer of the ardent observer is offered for an easterly wind, and strong of that; for if we get it continuously for the first week or ten days we may be sure of a visit of birds in splendid plumage. It is thus seen that a wind from an absolutely opposite quarter is required to bring in the May birds to what is required for the April ones. Sometimes when the wind has held in the east for several weeks, as it did in May 1876, the number of Godwits gathered in the estuary is past computation. In this memorable year only one person followed the birds, and at one shot with an ordinary shoulder-gun he killed twenty, so it can be imagined how thickly the flock crowded together. To show how rarely we get such a flight it must be mentioned that it was not until

nineteen years after (1895) that we got any considerable number in the estuary in full dress, and this was followed by a much bigger flight in 1896 under similar climatic conditions, and when a very beautiful series of males and females were secured. This year we got birds in April, but saw none in May; the east wind came too late.

At the very first shift in the wind to the south or west the Godwit takes its leave, so that I have known birds in numbers in the estuary in the evening (just dropped in), and not one to be seen at daybreak next morning.

The autumn-plumaged bird, when the young and old so much resemble each other in plumage (the young may always be known by the proportionately shorter bill), and in which the females can only be separated from the males by their superior size and length of bill, needs no description. As winter advances some changes ensue that are interesting; but, after all, it is only that change which is characteristic of many of our seaside Waders. I mean that the feathers of the mantle change from blackish brown with buff edging to ash-grey with white edging, and the same with the secondaries and wing-coverts, whilst the buff colour on the thorax disappears. As regards the markings on the tail, from which this bird takes its name, it is quite true that the tail of the adult in winter becomes nearly wholly ash-grey, losing in great measure the characteristic bars. I cannot, however, agree with the late Mr. Seebohm, who wrote: "The term Bar-tailed Godwit is an unfortunate one, as the tails of fully adult birds in winter plumage show scarcely any traces of bars," because the tail-coverts cover the entire tail, with the exception of just an inch at the tip, and these coverts are always strongly barred, so that the old shore-shooters who first described the species were not practically incorrect in distinguishing this species by the name Bar-tailed, in contradistinction to Black-tailed. Besides, as a rule, it is only the few central tail-feathers that lose, in this measure, their characteristic markings, and the side tail-feathers will always be found more or less strongly barred. The question next arises, is the tail moulted

in the spring?—because at this time the tail becomes strongly barred again. There is only one alternative to this taking place, and that is there must be a change in the pigment of the individual feather, the pale ash fading to white (often-times washed with chestnut) and the very faint bars becoming more strongly developed, and I am of opinion that this is what happens: certainly the tail-feathers of mature spring-plumaged males do not appear to me to be of new growth, as they are invariably worn at the tip.

Passing now to the spring plumage, we cannot resist admiring the rich chestnut-red of the adult male, which is so strikingly beautiful; and how some writers of recent date (Newton, 'Dictionary of Birds,' p. 366) have fallen into the error of describing the female as the brightest bird is surprising to me. It is hardly an exaggeration to say there is no comparison between the sexes: the rich red plumage of the underparts is peculiar to the male, the female having the feathers of the neck, thorax, and along the flanks merely barred or edged with rufous; above the rich black feathers of the male are broadly edged with chestnut-red, whilst in the female the edging is merely buff or white. The females which show only faint traces of rufous in their plumage at all at any age show scarcely any as first year's breeding birds. I took the pains to count the ova in all the females I obtained, and in a plain-coloured female, which I presumed would be a younger specimen, I found the ova to be one hundred and eight in number. In the other specimens, which were distinctly brighter, this number was not reached, which, I assumed, showed they had laid eggs and were older birds. Hardly believing that any change of plumage could take place in the female between the dates of their appearance in our estuary in May and their appearance at their breeding-station, yet wishing to make assurance doubly sure, I wrote to Mr. Leybourne Popham, who has observed this species in their breeding-haunts in Siberia, and who kindly replied as follows:—"They are (*i. e.* the male and female Bar-tailed Godwit) so totally distinct in the breeding-dress that I can only suppose your object in asking this question is because

some people have, I believe, stated that the bright-coloured bird is the female; but I found the rich chestnut-coloured bird the male, though there is a *slight* tinge of colour on the breast of the female, but nothing at all to be compared with that of the male." And, on my remarking that I had usually found the Godwit a very silent bird, he goes on to say: "The Bar-tailed Godwits are certainly not very silent on their breeding-grounds, and in the winter-time in Holland they call occasionally when on the wing, in small flocks, but not often. It is very difficult—at least I find it so—to put a bird's call accurately into words, and often no two people would write it the same; but, as near as I could get at it, their call at their nests sounded to me like 'Koo-wak,' and sometimes varied by 'Koówi-Koówi' (repeated rapidly); the latter is the one I hear in Holland in the winter." This pretty accurately describes a sound which I have heard uttered in a peculiarly squeaky tone, utterly unlike any other bird-note I know. Again, describing their behaviour at their nests Mr. Popham says: "I compare the Godwits to the Whimbrels at the Færoe Islands, especially as they shared the ground with Buffon's Skua in the same manner as the Whimbrels do with Richardson's Skuas."

Although this species is met with in numbers only at the times of migration on the south and west coasts of England, we know that flocks thousands strong frequent the bays and estuaries of the east coast north of the Humber, and also in Holland, on the opposite shores of the North Sea, all through winter. Extremes of temperature cannot, therefore, be the predisposing cause of their movement south in winter, but the reason must be sought for in their food-supply; and it would be interesting to ascertain in what way the shores of the North Sea differ from those of the English Channel in producing a food apparently to their liking. Tolerable numbers also are stated to winter on the west coast of Ireland; but the faunistic relationship as regards birds in the south-west peninsula of England is so similar to that of the south of Ireland that I suppose the number seen in the latter place in winter is small comparatively to that seen at the times of

migration, and that the numbers seen in winter bear the same relation to those seen with us at that time.

As regards the distribution of the Godwits, Seebohm gives the following hypothetical explanation in his 'Monograph of the Charadriidæ':—"Ancient routes of migration.—The Bar-tailed Godwit emigrated through Behring Straits, the ancestors of *L. fedoa* following the American coast, and those of *L. uropygialis* the Asiatic coast. The descendants of the latter gradually extended their range westwards until in post-glacial times the European examples were more or less isolated and differentiated from their Asiatic confrères and became *L. rufa*. The Black-tailed Godwits represent the party which chose the Atlantic route, the ancestors of *L. belgica* having followed the Atlantic coast of Europe. The latter gradually extended their range into Asia, and in post-glacial times the Eastern examples were more or less isolated and differentiated from their fellows, and have now become *L. melanuroides*."

That the flocks that come to us in April and those that arrive in May have wintered in degrees of longitude far apart is worthy of credence, because even when the interval of their arrival may be only a couple of weeks, yet one flock is still in winter dress (not immature only) and the other in the most perfect summer plumage. That the birds composing these flocks do not associate I have definite evidence, for in 1896 the birds that had arrived in April remained a longer time than usual, owing to a stiff easterly wind that came on and which brought us a large flock of red birds some ten days after the winter-plumaged birds had arrived. These two flocks kept entirely separate the few days they were in the estuary together, and did not associate in any way, as I had ample opportunity of ascertaining. Sometimes birds are met with singly (as a rule late in spring or during summer), of a very pale ash-grey; these are, I think, very old or sick birds, with not sufficient vitality left either to assume summer plumage or to follow the flocks to their Arctic breeding-haunts.

The Eastern representative of the Bar-tailed Godwit, on

account of its more strongly-barred rump, has been given specific distinction as *L. wropygialis*; it is found from the N.E. shores of Siberia in summer to New Zealand in winter. Its habits are similar to those of its congener in Europe, but the flocks moving up from the south are focussed to one spot, the North Cape in New Zealand, preparatory to their long flight to their breeding-grounds on each side of Behring Straits (for I am of opinion the species found in Alaska is identical with the Asiatic species), and the numbers there congregated before they take flight may be reckoned by thousands.

Coming to the New World representatives, we find some striking differences shown by *L. fedoa*, and although at first sight it is similar in general character to *L. rufa*, it requires a stretch of the imagination to believe the two had a common ancestor; but doubtless during the long ages and ages that have elapsed since the first migratory impulse arose, food and climatic influence have so modified them, that we find each species now eminently adapted to the general surroundings. It is unnecessary to give a detailed description of the plumage of *L. fedoa*, for that can be found in any good work on North-American ornithology, and there are many; but I wish to point out where this species differs from *L. rufa*. In the first place, it is no misnomer to call it the Marbled Godwit, for the barring and mottling of its dorsal plumage give it a peculiarly marbled appearance, while the underparts are pale buff, minutely spotted on the neck; and on the breast and flanks the feathers are barred with fine vermicular markings, the belly being usually free of such. In some males the barring is continued to the vent, but this is not a safe diagnostic character; and reliance must be placed on dissection or comparison, the females being invariably larger than the males. This species has no grey phase of plumage, so that, no matter if found on the lakes of Ontario or the swamps or sloughs of Florida, it is always in the same dress. It is a much larger species, and the bills of some females measure quite five and a half inches in length, whilst the

legs are longer and stouter in proportion ; the space above the tarsal joint is greater also. The Marbled Godwit or Marlin is a widely distributed species in North America, breeding in the interior on the prairies, not necessarily near water, from Iowa and Nebraska, northward to Manitoba and the Saskatchewan, whilst it migrates in winter as far south as Central America. It is well-known as the "bay-bird" among the 'longshore-men, and is conspicuous by its large size and its bay colour, especially on the axillaries. It is, in fact, the largest shore-bird excepting the Long-billed Curlew found on the mudbanks and sandy spits. In Colorado, where numbers pass through on their spring migration, they may be looked for just about the same time as we see the Bar-tailed here, namely, the first or second week in May.

Coming to the Black-tailed Godwits, we find species with well-marked distinctions in the Old and New World. They differ from the bar-tailed species in not being so eminently gregarious and not being so strictly marine in their habits ; they prefer the soft edges of the marshes and meadows, though oftentimes on migration the two species are found in company on the mudbanks.

Less than a century ago the Black-tailed Godwit, *L. belgica*, was a common breeding species in the fens of our south and south-eastern counties, but the incessant persecution to which they were subjected to on account of the delicacy of their flesh, and the gradual reclamation of the fens, has driven them from their breeding-haunts in England, and we see them now only on migration. In South-east Iceland, where the bird is known by the name of "*Jadrakan*," or Earth-raker, it breeds plentifully, also in the north of Holland and Poland, as well as other suitable places in subarctic Europe and Siberia. East of the Lena we find a smaller species, which has been separated as *L. melanuroides* ; but as there is complete intergradation in the way of size between this and *L. belgica*, its specific validity is doubtful. This intergradation exists also between *L. rufa* and *L. uropygialis* in the amount of bars and streaks on the rump ; and it seems to me a pity to assign specific rank in any case where such complete intergrading



forms exist. The school of separatists have surely gone too far in this direction, and we may not have to wait long before a reaction sets in, when the study of ornithology will be simplified in a very appreciable degree.

This smaller form breeds in summer in Eastern Siberia, and migrates in winter through China and Japan to Australia and New Zealand; the larger form is found as far south as Ceylon in winter.

The male in summer varies considerably in the tint of red on the throat and chest, some specimens obtained at the same time being much deeper in colour than others. The brightest bird I ever saw was shot on the Exe and is now in the Albert Memorial Museum, Exeter: in it the throat and breast were quite as bright a chestnut as we find in the brightest of the Bar-tailed species; but this is exceptional, the usual tint being merely reddish fawn, the feathers as they meet those of the flank becoming tipped with black, reminding one of the characteristic markings of the Hudsonian Godwit. The mantle is barred in strong contrast with black and chestnut. The female, which is always larger and has a proportionately longer bill, is paler in colour, and the strong contrast of black and chestnut on the mantle is not seen to anything like the same extent. The flanks, however, are barred with black and chestnut, as in the male, which is often so barred to the vent. The young may be known by the wing-coverts being heavily edged pale buff, which are always clear smoky ash in the adult, the edging having worn off by the following spring. The tail is black except the basal portion, which is white. The upper tail-coverts, which cover the tail excepting just an inch at the tip, are white, but black for the terminal half, so that the tail appears black to its base; while, as the bird takes flight, the white patch between the black rump and tail appears very conspicuously.

The bills of this species, as with all the family, I think, continue to develop for the first twelve months. The bills of the Black-tailed Godwits differ from those of the Bar-tailed in that the tip is slightly flattened to a spatulous shape, which is noticeable both in Old and New World species, resembling

the Snipes, whose bill is slightly flattened at the tip; but the bill is not so highly organized as in the latter family.

It is interesting to note how closely the Godwits approach the Snipes in external characteristics, as shown by the bill of the Red-breasted Snipe (*Macrorhamphus griseus*), which in its sensitive tip is like the Snipe, though its stouter basal portion shows its affinity to the Godwits; and again in its seasonal change of plumage the Red-breasted Snipe approaches the Godwits rather than the Snipes.

The Hudsonian Godwit seems to be the prototype of the Black-tailed Godwit of the Old World. This species (*L. hæmastica*) is met with generally on migration throughout the United States except west of the Rocky Mountains, and presents some interesting features. In the first place it is a dumpier bird (if I may use the expression) than the characteristic long-shanked Black-tailed Godwit of the Old World, being more like the Bar-tailed in this respect. The tail characteristics are as in the Black-tailed Godwit, but the feathers are more constantly tipped with white, and the under tail-coverts are boldly barred black and white. The black axillaries render this species unmistakable at any season. In one other respect it resembles the Bar-tailed Godwit: it has a distinct seasonal change of plumage, the sombre grey plumage of winter giving way to one of a bright chestnut on the whole of the underparts except the chin as summer advances. This change in both species is wrought not by a complete moult (only a few new feathers are produced) but by the growth of the old feather, which becomes deeply pigmented, whilst the white tips wear off, leaving a fine black line at the tip of each feather. The same change is effected in the dorsal region, the grey edging becoming worn off as the chestnut-scalloped black feathers continue to grow.

The female is larger than the male, and in summer is of a much lighter red. It is more gregarious in its habits than the Black-tailed, and in its winter-quarters is often met with in large flocks, associating with the Marbled Godwit; it breeds abundantly in the "barren lands" of the Arctic regions.

The group of Godwits, though sharply defined, show an affinity with the familiar *Gallinago* through the Red-breasted Snipe (*Macrorhamphus griseus*) and with *Totanus* through the Willet (*Symphemia semipalmata*) and the Terek Sandpiper (*Terekia cinerea*), allowing us to infer that when sharp lines of demarcation exist in families the link is only missing, dropped out, or improved upon by the survival of the fittest, adapting itself to the slow but sure changes in Nature. In fact it is impossible to avoid the conclusion, when we thus consider this group, that they have been derived from some common ancestor. It is far more difficult to speculate why certain characteristics have been retained or lost in the individual species of the two groups; but there are indications that the changes have been effected in consequence of the different breeding-haunts of the species, and it will also be found that those that wing their way farthest north have proportionately more pointed wings.

XLIII.—*The Birds of Spitsbergen, as at present determined.*

By AUBYN TREVOR-BATTYE, B.A., F.L.S., &c., Zoologist to the Conway Expedition of 1896.

I DO NOT think it needful to give, in this Introduction, more than an outline of the voyage to which it refers. 'The Ibis' cannot fairly be asked to concern itself with personal adventures, but rather with an account of the birds. We left Tromsö on June 15th, sighted Bear Island about one o'clock on the following day, and on the 17th inst. fell in with light scattered ice in N. lat. 76° 10'. All that day we went through the ice, sighting, towards evening, Horn Mountain and the Spitsbergen cliffs.

Upon the ice were many young harp-seals, no doubt on their migration eastward to the Siberian seas. Brünnich's Guillemots, Mandt's Black Guillemots, Fulmars, Little Auks, Arctic Terns, and one pair of Pomatorhine Skuas exhaust the birds we saw that day.

On the 18th we landed at Cape Staraschin, in Ice Fjord. In view of the contradictory statements about the Bernicle